Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Objective: The left retroperitoneal (LRP) approach to the aorta is a well-established technique for aortic exposure. The right retroperitoneal (RRP) approach to the aorta has been performed less often, and the outcomes remain unknown. The purpose of our study was to evaluate the outcomes of RRP aortic procedures and to determine whether it is a viable strategy to preserve the LRP space for future procedures.

Methods: We performed a retrospective review of a prospectively maintained computerized database with a query for all retroperitoneal aortic procedures. The patients' medical records were reviewed and data collected. The demographics, indications, intraoperative details, and outcomes were tabulated.

Results: We found 6076 retroperitoneal approaches for aortic procedures that had been performed between 1984 and 2020. Of these, 225 had used the RRP approach. Of the 225 patients, 153 were men (68%), and the median age was 65.2 years (range, 26-88). The comorbidities included hypercholesterolemia (n = 98; 15.6%), hypertension (n = 38; 16.9%), coronary artery disease (n = 25; 11.1%), current tobacco use (n = 98; 43.6%), diabetes (n = 32; 14.2%), and renal failure (n = 5; 2.2%). The indications for intervention included aneurysm (n = 112; 49.8%), occlusive disease (n = 100; 44.4%), and other (n = 13; 5.8%). The intraoperative blood loss was 967.1 mL (range, 50-8000 mL). Perioperative complications occurred in 43 patients (19.1%), with a total of 50 complications. These included cardiac events (n = 5), cerebrovascular events (n = 3), multiorgan failure (n = 8), renal failure (n = 4), pulmonary events (n = 3), bleeding (n = 7), colon ischemia (n = 6), hematoma (n = 1), infection (n = 2), limb loss (n = 3), and graft occlusion or stenosis (n = 5). Four patients died perioperatively (1.8%). Of the 225 patients treated with a RRP approach, 31 required 66 subsequent procedures. These procedures included 29 cases of extra-anatomic bypass, 19 cases of thrombectomy or embolectomy, 10 cases of bypass revision, 5 cases of infected graft excision, and 3 cases of aneurysm revision. Of the 225 patients in the RRP group, 8 had eventually undergone a LRP approach for aortic reconstruction and had also required 26 subsequent procedures. Of the RRP group, 14 had undergone a prior LRP approach and had required 12 subsequent procedures.

Conclusions: The RRP approach to the aorta is a useful technique in the setting of prior surgery, anatomic abnormality, or infection that complicates the use of other approaches. The outcomes were similar to those with other more standard approaches. The RRP aortic approach has the added benefit of preserving the left retroperitoneum for future inflow procedures.

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Global Burden of Disease of Peripheral Artery Disease

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Objective: Previous efforts to characterize the burden of peripheral artery disease (PAD) have been limited to national patient cohorts, and an up-to-date international analysis is lacking. We aimed to characterize the burden of PAD globally and provide a comprehensive analysis on the geographic and temporal trends of disease from 1990 to 2019.

Methods: Using data from the Global Burden of Diseases Study, we estimated the age-adjusted prevalence, mortality, and disability-adjusted life-years attributable to PAD. We analyzed the results over time and stratified by sex and Social Demographic Index (SDI) group. We compared PAD to other atherosclerosis-related conditions (eg, ischemic heart disease, ischemic stroke). We also assessed the contribution of risk factors (ie, smoking, hypertension, diabetes, chronic kidney disease) to the PAD disability-adjusted life-years.

Results: Between 1990 and 2019, we observed an almost twofold increase in overall global prevalence of PAD per 100,000 persons, from a low in 1990 of 1143 to a high in 2019 of 3141. This increase primarily occurred from the higher rates among high SDI countries (eg, United States, 2219/100,000 persons; Denmark, 2701/100,000 persons). In contrast, the lowest rates of disease were seen in low SDI countries (eg, Niger, 424/100,000 persons; Afghanistan, 435/100,000 persons; Fig). The prevalence among women was higher than that among men, increasing from 1283 per 100,000 women in 1990 to 3283 per 100,000 women in 2019 (>150% increase). However, PAD-associated mortality was more than twice as high for men than for women (men, 1.86/100,000; women, 0.83/100,000). These increases in the burden of disease from PAD were in marked contrast to the data for ischemic heart disease and stroke, which had a decreasing prevalence and disease-related mortality. Overall, only ~55% of the overall burden of disease could be attributed to identified risk factors, with tobacco use, diabetes, and hypertension the three major contributors in all SDI groups.

Conclusions: The global prevalence and morality associated with PAD is increasing and affects women disproportionately to men. Targeted efforts to reduce and treat PAD risk factors are urgently needed.

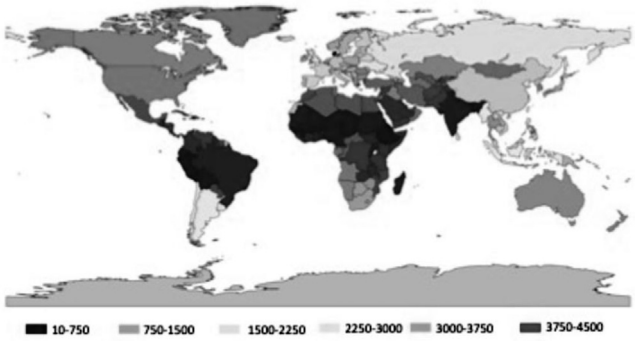

Fig. World-wide prevalence of peripheral artery disease (PAD) in 2019 among men and women.

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Early Outcomes of Acute Limb Ischemia in Coronavirus Disease 2019: A Multicenter, Retrospective Cohort Study

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Objective: Infection with SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) can result in arterial thrombosis and acute limb ischemia (ALI) with devastating consequences. We compared the outcomes of ALI in the lower extremities in patients with and without coronavirus disease 2019 (COVID-19) in the United States.

Methods: Queries were created on TriNetX, a federated network of healthcare organizations across the United States that provides de-identified patient data. International Classification of Diseases, 10th revision, diagnostic codes were used to identify patients with ALI of the lower extremities and COVID-19. The study period was defined as January 20, 2020 to March 1, 2021. Statistical analyses, including propensity score matching, were performed using TriNetX's internal software. The outcomes included mortality, stroke, myocardial infarction, major adverse limb events, reintervention, and acute renal failure rates. The baseline cohort characteristics were also collected.

Results: ALI patients with COVID-19 (ALI C19+; n = 313) were significantly less likely than ALI patients without COVID-19 (ALI; n = 9300) to have baseline comorbidities, including nicotine dependence (18% vs 33%; $P < .0001$). The ALI C19+ patients had significantly higher 30-day rates of mortality (15.974% vs 3.774%; $P < .0001$), major adverse limb events (4.153% vs 1.806%; $P = .0027$), reintervention (4.181% vs 1.680%; $P =$

.0015), and acute renal failure (19.808% vs 8.032%; $P < .0027$). After propensity matching, ALI C19+ patients still had significantly higher rates of mortality (16.026% vs 3.846%; $P < .0001$) and acute renal failure (19.872% vs 8.013%; $P < .0001$).

Conclusions: Despite a lower prevalence of comorbidities, ALI C19+ patients had significantly higher rates of mortality, major adverse limb events, reintervention, and acute renal failure compared with the patients with ALI without COVID-19. After controlling for age, sex, ethnicity, and comorbidities, only the rates of mortality and acute renal failure were significant. This suggests that COVID-19 might be directly responsible for some of the adverse outcomes for ALI C19+ patients, and the prevalence of comorbidities before SARS-CoV-2 infection might significantly worsen their outcomes.

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Midterm Survival After Endovascular Repair Versus Open Repair of Complex Abdominal Aortic Aneurysms Stratified by Age

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Objective: Recent studies have reported conflicting evidence regarding the survival benefit of endovascular repair compared with open repair of complex abdominal aortic aneurysms (cAAAs). However, these studies were composed of cohorts with a median age >70 years. In the present study, we examined the midterm survival after endovascular vs open repair of cAAAs, stratified by age.

Methods: We identified all patients who had undergone endovascular and open cAAA repair in the Vascular Quality Initiative from 2014 to 2020. The patients were stratified into three age groups: <65 years, 65 to 75 years, or >75 years. The primary outcome was 3-year and perioperative survival, which was determined by inverse probability-weighted Cox regression and Kaplan-Meier methods.

Results: Overall, 2207 patients had undergone complex endovascular aneurysm repair (c-EVAR) and 3233 patients had undergone complex open aneurysm repair (c-OAR) for cAAA (c-EVAR vs c-OAR: age <65 years, 27% vs 73%; age 65-75 years, 37% vs 63%; age >75 years, 53% vs 47%). After inverse probability-weighted adjustment, patients aged <65 years experienced a greater hazard of mortality at 3 years after c-EVAR compared with c-OAR (hazard ratio [HR], 3.9; 95% confidence interval [CI], 1.9-8.2; $P = .011$), with no differences in perioperative mortality (HR, 1.6; 95% CI, 0.41-5.9; Fig *A*). However, for patients aged 65 to 75 years, no differences were found in the mortality hazard at 3 years (HR, 0.72; 95% CI, 0.50-1.02; $P = .064$) after experiencing a lower risk of perioperative mortality after c-EVAR (HR, 0.55; 95% CI, 0.32-0.94; Fig *B*). Similarly, no difference was found in 3-year mortality for patients aged >75 years (HR, 0.76; 95% CI, 0.53-1.09; $P = .14$) after a lower risk of mortality with c-EVAR in the perioperative period (HR, 0.35; 95% CI, 0.19-0.64).

Conclusions: For patients undergoing cAAA repair, c-EVAR was associated with a greater hazard of 3-year mortality for patients aged <65 years with no perioperative survival benefit. For patients aged ≥65 years, no difference was found in the 3-year mortality; however, the risk of perioperative mortality after c-EVAR was lower. Patients aged <65 years should be strongly considered for open repair for cAAAs owing to its potential survival benefit.

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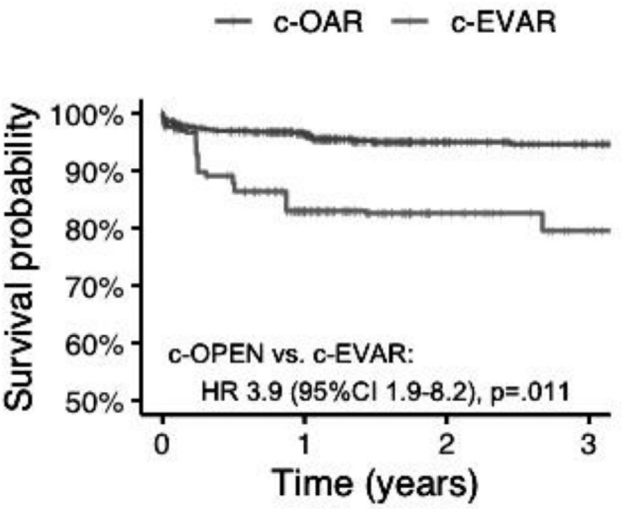

Figure 1B. > 75 Years

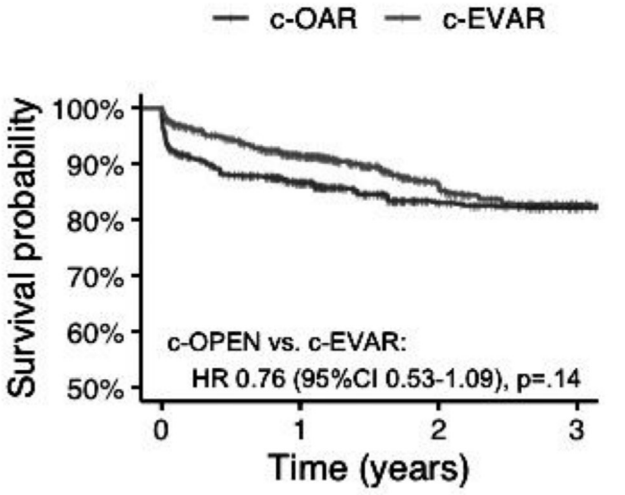

Fig. A, Graph showing survival probability for patients aged <65 years. **B,** Graph showing survival probability for patients aged >75 years. *c-EVAR,* Complex endovascular aneurysm repair; *CI,* confidence interval; *HR,* hazard ratio; *c-OAR,* complex open aneurysm repair.

Radiographic Relationships of the Femoral Head, Inguinal Ligament, and Common Femoral Artery Bifurcation for Optimal Vascular Access

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Objective: Common femoral artery (CFA) access is often used for endovascular interventions. Access site complications contribute to significant morbidity and mortality. We characterized the radiographic variability of the femoral head, inguinal ligament, and the CFA bifurcation to identify the optimal CFA access zone.

Methods: Human cadaver dissection of the inguinal ligament and CFA bifurcation was performed. The inguinal ligament and CFA bifurcation were marked with radiopaque pins, and plain anteroposterior radiographs were obtained. Radiographic measurements of the femoral head length and the distance from the top of the femoral head to the inguinal ligament and to the CFA bifurcation were obtained. The results